

Claims:

1. A method of manufacturing a fumed silica useful for polishing tungsten and titanium on a semiconductor wafer comprising:
  - providing a predetermined volume of water;
  - providing a predetermined concentration of the fumed silica, wherein the concentration is at least by weight percent 35 of the volume of water;
  - mixing an acid into the volume of water to acidify the water, wherein the concentration of the acid is by weight percent 0.0010 to 0.5 of the concentration of the fumed silica;
  - dispersing the fumed silica into the acidified water;
  - diluting the concentration of the fumed silica, wherein the water has a pH of 1 to 7;and
  - collecting the fumed silica.
2. The method of claim 1 wherein the pH of the water is 1.5 to 5.5.
3. The method of claim 1 wherein the dispersing is performed at a temperature less than 60 °C.
4. The method of claim 1 wherein the concentration of the fumed silica is by weight percent between 40 to 60 of the volume of water.
5. The method of claim 1 wherein the concentration of the acid is by weight percent 0.02 to 0.15 of the concentration of the fumed silica.
6. The method of claim 1 wherein the fumed silica has a surface area of greater than 90 m<sup>2</sup>/g.
7. The method of claim 6 wherein the fumed silica has a surface area of greater than 130 m<sup>2</sup>/g.

8. A fumed silica useful for polishing tungsten and titanium on a semiconductor wafer wherein the fumed silica has a surface area of greater than  $90 \text{ m}^2/\text{g}$  and has been entirely dispersed and diluted in an acidic pH.

9. The fumed silica of claim 8 wherein the fumed silica has a surface area greater than  $130 \text{ m}^2/\text{g}$ .

10. A composition useful for polishing tungsten and titanium on a semiconductor wafer, the composition containing an abrasive, wherein the abrasive is fumed silica that has a surface area of greater than  $90 \text{ m}^2/\text{g}$  and has been entirely dispersed and diluted in an acidic pH.